CLAIMS

1. A method of controlling an array of optical elements in a succession of cycles to alter their states according to respective ones of a series of input data sets, each cycle comprising a first step wherein selected elements only of an optically blank or uniform array are written as determined by a respective data set, and a second step wherein the selected elements are selectively erased to restore a blank array prior to another cycle.

2. A method according to claim 1 wherein the array of optical elements to which the method is applied comprises a corresponding array of addressable active elements, and an electrode spaced from said corresponding array, each optical element being defined between said spaced electrode and a corresponding active element, and wherein during the said first step the active elements of said first set and the spaced electrode are operated to apply a first potential difference across the selected optical elements of the first set, and during the said second step the active elements of said second set and the spaced electrode are operated to apply a second potential difference across the selected optical elements of the second set, the first and second potential differences having opposite signs.

3. A method according to claim 2 wherein said first and second potential differences have equal amplitudes.

4. A method according to claim 2 or claim 3 wherein between the first and second said steps the voltage on the spaced electrode and the voltage applied to each element of the array are all shifted substantially simultaneously by the same amount and in the same direction relative to a reference voltage.

5. A method according to claim 1 wherein the array of optical elements to which the method is applied comprises a corresponding array of addressable active elements, and an electrode spaced from said corresponding array, each optical element being defined between said spaced electrode and a corresponding active element, and wherein between the first and second said steps the voltage on the spaced electrode and the voltage applied to each element of the array are all shifted substantially

simultaneously by the same amount and in the same direction relative to a reference voltage.

6. A method according to claim 4 or claim 5 wherein said shift in voltage is applied to said spaced electrode only for substantially the duration of said second step.

7. A method according to any preceding claim wherein between said first step and said second step is a step of simultaneously addressing all the optical elements of the array so as to impose zero potential difference thereacross.

8. A method according to any one of claims 1 to 6 wherein between said first step and said second step is a step of simultaneously addressing all the optical elements of the array so as to impose a finite dc potential difference thereacross.

9. A method according to claim 7 or claim 8 wherein the optical elements are capacitative and subsequent to said simultaneous addressing all the optical elements are rendered open circuit.

10. A method according to any one of claims 1 to 6 wherein between said first step and said second step is a step of simultaneously addressing all the optical elements of the array so as to impose a finite ac potential difference thereacross.

11. A method of synthesising a multi-level image using a multiple or weighted bit plane technique in which each bit plane is written by a method as defined in any preceding claim.

12. A method according to claim 12 wherein the said method for writing each bit plane provides dc balancing.

13. An electro-optic arrangement comprising an array of electro-optic elements and control means responsive to a series of input data sets, the control means being arranged to respond to each data set so that starting with an optically blank or uniform array of elements in a first step selected elements are written as determined by the data set, and in a second step the selected elements are selectively erased to revert to a blank array prior to writing elements as determined by a successive data set.

14. An arrangement according to claim 13 wherein said array of electro-optic elements is defined by corresponding pixel electrodes of an active backplane.

15. An arrangement according to claim 14 wherein said active backplane is a semiconductor backplane.

16. An arrangement according to any one of claims 13 to 15 wherein said electro-optic elements comprise liquid crystal material located between said pixel electrodes and a spaced electrode.

17. An arrangement according to claim 16 wherein said spaced electrode is a single electrode common to all said electro-optic elements.

18. An arrangement according to any one of claims 13 to 17 wherein the electro-optic elements are bistable.

19. An arrangement according to any one of claims 13 to 17 wherein the electro-optic elements are monostable with a finite relaxation time.

20. An arrangement according to any one of claims 13 to 19 wherein said array comprises a plurality of mutually exclusive sets of said elements, means arranged to address said sets one at a time, and means for addressing more than one of said plurality of sets simultaneously.